

## **DIRECTIONAL HEARING ENHANCEMENT SYSTEMS**

### **ABSTRACT OF THE DISCLOSURE**

A hearing enhancement system that enhances a user's hearing based on a directional speaker is disclosed. In one embodiment, the system can include an interface unit that has a directional speaker and a microphone. The microphone captures input audio signals that are transformed into ultrasonic signals. The speaker transmits the ultrasonic signals, which are transformed into output audio signals by interaction with air. At least a portion of the output audio signals are modified to enhance the hearing of the user. Based on the system, the user's ear remains free from any inserted objects and thus is free from annoying occlusion effects. Compared to existing hearing aids, the system is relatively inexpensive. In another embodiment, the system can also be used as a phone. In yet another embodiment, the system can also access audio signals from other portable or non-portable instruments, wired or wirelessly, such as from home entertainment units, phones, microphones at a conference or speakers at a movie theater.